

The *resultant winds*, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart IV, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity. These figures indicate the relative extent to which winds from different directions counterbalanced each other.

HIGH WINDS.

Maximum wind velocities of 50 miles or more per hour were reported during this month at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		<i>Miles</i>				<i>Miles</i>	
Amarillo, Tex.	9	64	n.	Huron, S. Dak.	6	53	sw.
Do.	10	60	se.	Do.	13	56	sw.
Do.	11	56	n.	Pierre, S. Dak.	13	53	sw.
Do.	21	52	w.	Do.	21	53	w.
Block Island, R. I.	14	64	e.	St. Louis, Mo.	21	52	n.w.
Chicago, Ill.	7	50	sw.	San Antonio, Tex.	11	53	n.
Detroit, Mich.	25	50	w.	Sioux City, Iowa.	6	56	sw.
Fort Canby, Wash.	7	54	se.				

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—The dates on which reports of thunderstorms for the whole country were most numerous were: 6th, 243; 7th, 245; 8th, 229; 9th, 200; 17th, 213; 20th, 204; 21st, 335; 24th, 216; 25th, 202.

Thunderstorm reports were most numerous in: Ohio, 424; Missouri, 293; North Carolina, 219; Illinois, 210.

Thunderstorms were most frequent in: Florida, 29 days; Alabama, Colorado, Illinois, Missouri, South Dakota, and West Virginia, 26; Idaho, Iowa, North Carolina, and Ohio, 25.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 20th to the 28th, inclusive. On the remaining twenty-one days of this month 40 reports were received, or an average of about 2 per day. The dates on which the number of reports especially exceeded this average were: 5th, 5; 8th and 11th, 4; 29th, 8.

Auroras were reported by a large percentage of observers in: Delaware, 50; New Hampshire, 30; Maine, 12.

Auroras were reported most frequently in: New Hampshire, 7 days; North Dakota, 5; Minnesota and Wisconsin, 4; Delaware, 3.

CANADIAN REPORTS.

Thunderstorms were reported as follows: Grindstone, 19th; Grand Manan, 21st, 22d; Yarmouth, 9th, 22d; St. Andrews, 21st, 22d; Charlottetown, 22d; Chatham, 4th, 18th; Father Point, 22d; Quebec, 4th, 18th, 21st, 22d, 29th; Montreal, 7th, 21st; Rockliffe, 6th; Toronto, 6th, 7th, 21st, 28th; Port Stanley, 6th, 7th, 8th, 9th, 21st, 25th; Saugeen, 26th; Parry Sound, 5th; Port Arthur, 18th, 27th; Winnipeg, 4th, 15th, 24th, 26th; Minnedosa, 4th, 14th, 16th, 18th, 26th, 27th; Qu'Appelle, 16th, 22d, 26th; Medicine Hat, 5th, 10th; Swift Current, 2d, 3d, 19th, 23d; Banff, 2d; Edmonton, 1st, 2d, 8th, 12th, 16th, 18th, 22d, 26th; Battleford, 2d, 14th, 15th, 18th, 21st, 23d.

Auroras were reported as follows: Father Point, 5th, 7th, 14th, 15th, 16th, 17th; Quebec, 2d, 14th, 15th, 16th, 17th, 26th, 29th; Montreal, 16th; Toronto, 26th; Winnipeg, 8th, 9th; Minnedosa, 1st; Banff, 9th, 11th, 13th, 14th, 21st, 23d; Prince Albert, 9th, 15th, 17th, 30th.

INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers for the current month are given in Table VIII, from which it appears that the Willamette, at Portland, Oreg., remained above the danger line from the 1st to the 25th, being highest, 23.8, on the 23d, 24th, and 25th. The only other cases in which the rivers approached the danger line were the lower Missouri, which rose to within 3 or 4 feet, and the upper Mississippi, which rose to within 1, 2, or 3 feet of the danger line.

On the 6th heavy rainstorms occurred in the interior of Ohio; also in Marshall County, W. Va., and in Belmont County, Ohio, all in the vicinity of Wheeling, W. Va. As a result, the tributaries of the Ohio rose very suddenly. Three lives were lost by drowning and a large amount of railroad property, bridges, trestles, etc., was destroyed.

Destructive rain and wind storms occurred in Minnesota, Wisconsin, Iowa, Illinois, and Missouri. Five persons were drowned, a number were injured by the wind; hundreds of cattle, sheep, and hogs were drowned. Newspaper estimates place the damage at half a million dollars.

METEOROLOGY AND MAGNETISM.

By Prof. FRANK H. BIGELOW.

For a description of the methods of constructing the tables and curves of Chart V, see the WEATHER REVIEW for October, 1895, and January, 1896. The numbers in the columns H. and D. are added respectively to the mean values for Washington and Toronto, i. e., $H=0.18250$; $D=180.0$. The values of the vertical force are omitted, as well as dz , s and a , which depend upon it.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective services.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 77.2°, or 0.6° below normal; the highest was 100°, at Ashville on the 26th, 27th, and 30th, at Eufaula on the 29th, and at Goodwater on the 30th; the lowest was 48° at Valleyhead on the 15th. The average precipitation was 5.24, or 0.44 above normal; the greatest monthly amount, 13.15, fell at Daphne, and the least, 1.94, at Opelika.

Arizona.—The mean temperature was 83.6°, or 6.6° above normal; the highest was 127°, at Fort Mojave on the 15th, and the lowest, 35°, at Flagstaff on the 4th. The average precipitation was 0.24, or 0.12 below normal; the greatest monthly amount, 1.81, fell at Fort Huachuca. Nineteen stations reported no precipitation.

Arkansas.—The mean temperature was 77.7°, or 0.8° above normal; the highest was 103°, at Malvern on the 27th, and the lowest, 48°, at Silver Springs on the 3d. The average precipitation was 1.91, or 2.14 below normal; the greatest monthly amount, 4.65, fell at Stuttgart, and the least, 0.10, at Texarkana.

California.—The mean temperature was 72.5°, or 1.7° above normal;